PHONO PREAMP REVIEWS

Sentec EQ11 phono preamplifier

Herb Reichert | Oct 24, 2014

With quiet elegance, the Sentec EQ11 phono stage and equalizer entered my expanding world of gramophone dreams. The EQ11 ($2500) is a modestly sized, tubed phono stage with the industry-standard RIAA phono equalization *and* five other EQ curves. These additional curves are for records pressed by companies that did not fully or promptly comply with the new, supposedly global industry standard introduced by the Recording Industry Association of America (RIAA) in 1954.

Before 1955, every record company chose and applied its own version of recording equalization; there were over 100 combinations of turnover and rolloff frequencies in use, the main ones being Columbia-78, Decca-U.S., European (various), Victor-78 (various), Associated, BBC, NAB, Orthacoustic, World, Columbia LP, Decca *ffrr* 78 and microgroove, and AES.

The Sentec EQ11 comes in an attractive steel chassis of hammertone gray with a gold-anodized faceplate and, sticking up through the top plate, pairs of JAN G.E. 5751 (special 12AX7) and JAN Philips 6189W tubes. A single, vintage-style black knob selects among six settings, labeled thusly:

1) NARTB, NAB old
2) 78, Decca *ffrr* 78
3) CCIR, Decca LP *ffrr*
4) RIAA, New Ortho
5) Columbia LP
6) AES, Philips, Capitol

These six equalizations reflect most of the major variations found in 78, 45, and 331?3rpm gramophone recordings made between 1920 and 1965. In 1948, in response to the noise and short playing times of shellac 78s, Columbia Records introduced the microgrooved long-playing vinyl $33^{1}/_{3}$rpm record, in diameters of 10" and 12". Not to be outgunned or outsold, RCA Victor, in 1949, introduced the 7", 45rpm vinyl record. The 7" 45 was not long-playing, but it was small and cheap, and most pop, "hillbilly," "race," and children's records would hereafter be issued in that format, replacing the 10" 78 as the reigning single format. The first stereo vinyl LP appeared around 1958, but stereo records did not become popular or even common until about 1965. Most 45s were pressed in mono until about 1970. At first, stereo recordings appealed mostly to adult listeners, who favored 12" LPs featuring classical, cabaret, and jazz artists.

The 15 years from 1955 to 1970 were a period of intense competition for all European and US record companies. Record stores and radio stations flourished, even in small farm towns. Finding artists, recording hit songs, and grabbing as much of the rapidly evolving market as possible were not easy tasks. Postwar artists such as Charlie Parker and Elvis Presley needed to punch their way into the public consciousness. Each record label

began selling its own version of good sound as well as of good music. Good-sounding records got more play on the radio, and thus more attention from listeners. Every record producer and engineer strived to develop his own special technology—a signature sound.

During this period, the RIAA worked hard to enforce its new "universal" standards of equalization for recording and playback, as part of a larger program that included standardizing record size, groove width, and playing times per side. More often than not, the RIAA's newfangled EQ was at odds with the established agendas and sonic identities of record labels and producers. Consequently, almost a decade elapsed before all labels had gotten in line with the new strategy of RIAA pre-emphasis (footnote 1). This period was also a time of great achievement in music. Parker, Presley, James Brown, Artie Shaw, the Carter Family, Duke Ellington, Hank Williams, Johnny Cash, Ella Fitzgerald, Skip James, Edith Piaf, Bill Monroe, John Coltrane, Frank Sinatra, Bob Dylan, Little Richard, the Beatles, and a billion other musical geniuses all recorded between 1945 and 1965. The majority of these artists' original recordings were made in mono to recording specifications that did not conform to RIAA standards.

Audiophiles, home-audio DIYers, and record collectors were the first to notice the lack of compatibility of discs and playback gear, and the first to grumble and seek help. Manufacturers of popular ceramic and crystal cartridges were put on notice to tame their rising response curves, while makers of specialty preamps responded with enhanced tone controls and selectable EQ curves corresponding to the various record labels' deviations from the RIAA curve. RCA was the first to actively lobby for the RIAA standard, and the first to comply with them, in 1955.

By 1975, most audiophile amplifiers had banished tone controls, mono switches, and variable EQ selectors, considering them old-fashioned, no-longer-needed "corruptions" of the signal path's "purity." Forty years later, we have an outbreak of high-end manufacturers introducing new mono and 78rpm cartridges, and variable-EQ preamps designed to make the life of the vintage record collector more pleasurable.

I tell you all this because it's important to understand that if you start buying a lot of collectible old records pressed before 1965, you'll certainly

notice that the music on some labels sounds a lot better than the music on others. The purpose of the Sentec EQ11 is to make many of those differences go away. The EQ11's selection of EQ curves is similar to those that came standard on many "audiophile" preamps made between 1955 and 1965.

Like the Miyajima Spirit Mono cartridge The Sentec EQ11 preamp-equalizer are luxury products designed for the collector of vintage vinyl who wants to hear his or her valued records sound as close to, and maybe even substantially better than, what he or she remembers from the old days. This combination of pure mono cartridge and selectable-EQ preamp can show you a lot of what you still haven't heard from your old records. This combo, and perhaps others like it, not only makes the records of the past sound good, it makes them sound the way your brain knows they're *supposed* to sound—the way your heart remembers them sounding.

Any time you play a record and your brain jumps up to announce, *That's it, buddy! That's the way this record is supposed to sound!*, that's the surest sign that you're cooking on good audio gas. This feeling is also exactly what is missing from the experience of most recordings remastered, re-equalized, and reissued on 180gm vinyl pressings.

I have this totally magic album, *Dinu Lipatti Plays Bach and Mozart* (Columbia Masterworks ML 4633). I often play the Bach side for my guests, just to show them what quiet authority and expressive understatement sound like. But it always sounds kind of hard and bright, a little cool and thin. Some guests blame it on my amp or speakers. When I first installed the Sentec EQ11, I thought, *Okay, let me try that Dinu!* When I switched from the Sentec's RIAA curve to its Columbia LP curve, I smiled and nodded my thanks. The sound wasn't radically different—just enough to make every note more relaxed, open, and distinctly colorful. Weight and body appeared as if from nowhere. The piano became a tangible, vibrating object. The effect was like the complete and sudden vanishing of a nagging low-grade headache. With each old record I tried, the result of switching EQs ranged from unnoticeable to *Oh my god, I am so happy to have this thing!*

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Sentec EQ11 phono preamplifier Specifications

Sidebar 1: Specifications

Description: Low-gain, tubed moving-magnet phono premplifier with multiple equalization settings and wall-wart power supply. Tube complement: 2 JAN G.E. 5751 (special 12AX7), 2 JAN Philips 6189W tubes. Measured voltage gain at 1kHz: 29.5–30.6dB, depending on EQ. Measured input impedance at 1kHz: 45k ohms. Measured output impedance at 1kHz: 2k ohms. Measured S/N ratio: 72.6dB (A-weighted) ref. 1kHz at 5mV.
Serial number of review sample: "Made in Sweden."
Price: $2500.
Manufacturer: Sentec, Sweden. US distributor: Tone Imports. Web: www.toneimports.com.

NEXT: Measurements »

COMPANY INFO

Sentec
US distributor: Tone Imports
www.toneimports.com

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Sentec EQ11 phono preamplifier Measurements

Sidebar 2: Measurements

I measured the Sentec EQ11 using my top-of-the-line Audio Precision SYS2722 system (see www.ap.com, and the January 2008 "As We See It."). With all settings of its front-panel knob, the EQ11 preserved absolute polarity (*ie*, was non-inverting). Its input impedance was 45k ohms at low and middle frequencies, dropping to 33k ohms at the top of the audioband. The treble and midrange output impedances were high, at 2k ohms, rising to 5k ohms in the low bass.

As well as RIAA phono equalization, labeled "RIAA, New Ortho" on the Sentec's front panel, the EQ11 offers five other EQ curves: "NARTB, NAB old," "78, Decca *ffrr* 78," "CCIR, Decca LP *ffrr*," "Columbia LP," and "AES, Philips, Capitol." The voltage gain at 1kHz varied slightly with the EQ chosen, from 29.5dB at the "NARTB" and "Columbia LP" settings to 30.6dB at the "78, Decca *ffrr* 78" and "CCIR, Decca LP *ffrr*" settings. The right-channel gain was between 0.5 and 1dB lower than the left, as can be seen in fig.1, which plots the Sentec's response with RIAA correction. The shapes of the two channels' responses closely match, and feature a small, +0.7dB plateau in the treble and the IEC low-frequency rolloff, which reaches −3dB at 10Hz.

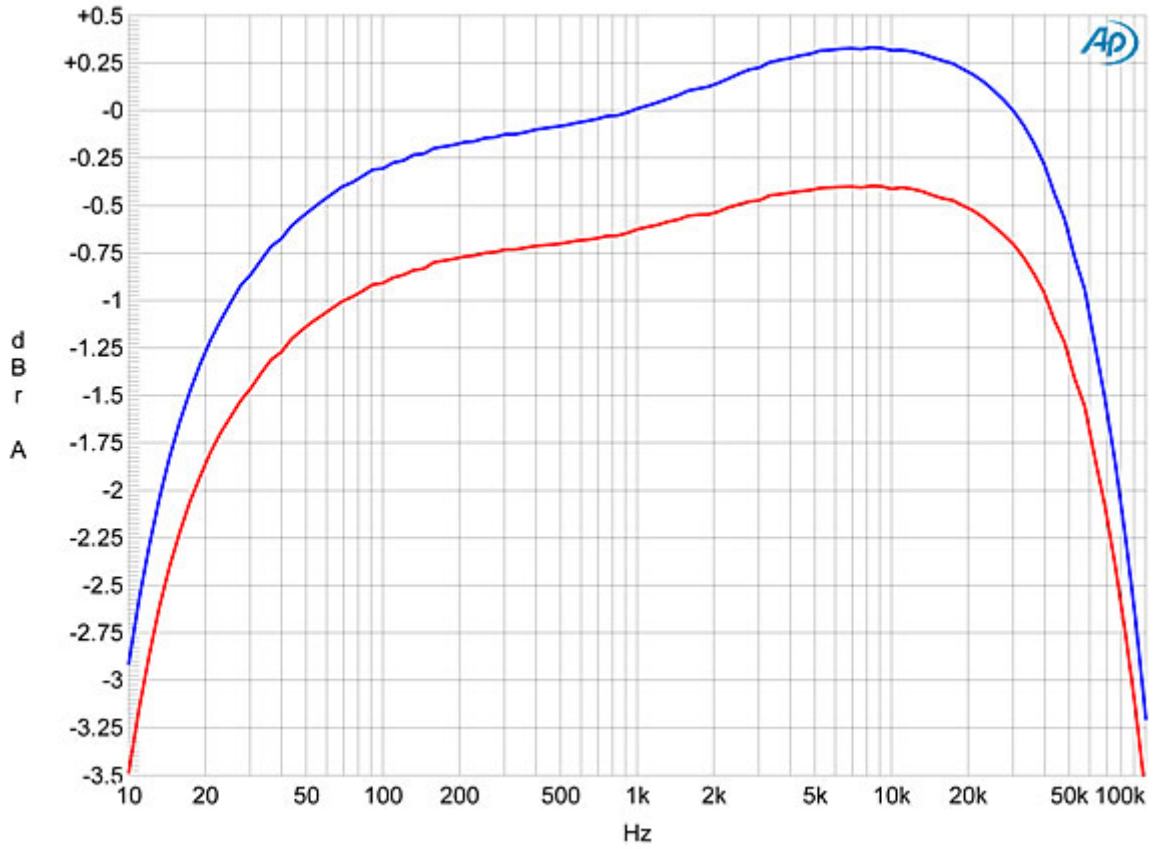

Fig.1 Sentec EQ11, response with RIAA correction (left channel blue, right red) (0.25dB/vertical div.).

Fig.2 shows the response of the six EQ settings with an RIAA-equalized test signal. The green trace shows the effect of the "Columbia LP" setting compared with RIAA. Though the low frequencies roll off more quickly with Columbia than with RIAA, there is a slight boost in the midrange and a shelved-down treble that reaches –2dB at 20kHz. This change in tonal balance nicely correlates with what HR heard with his Dinu Lipatti LP.

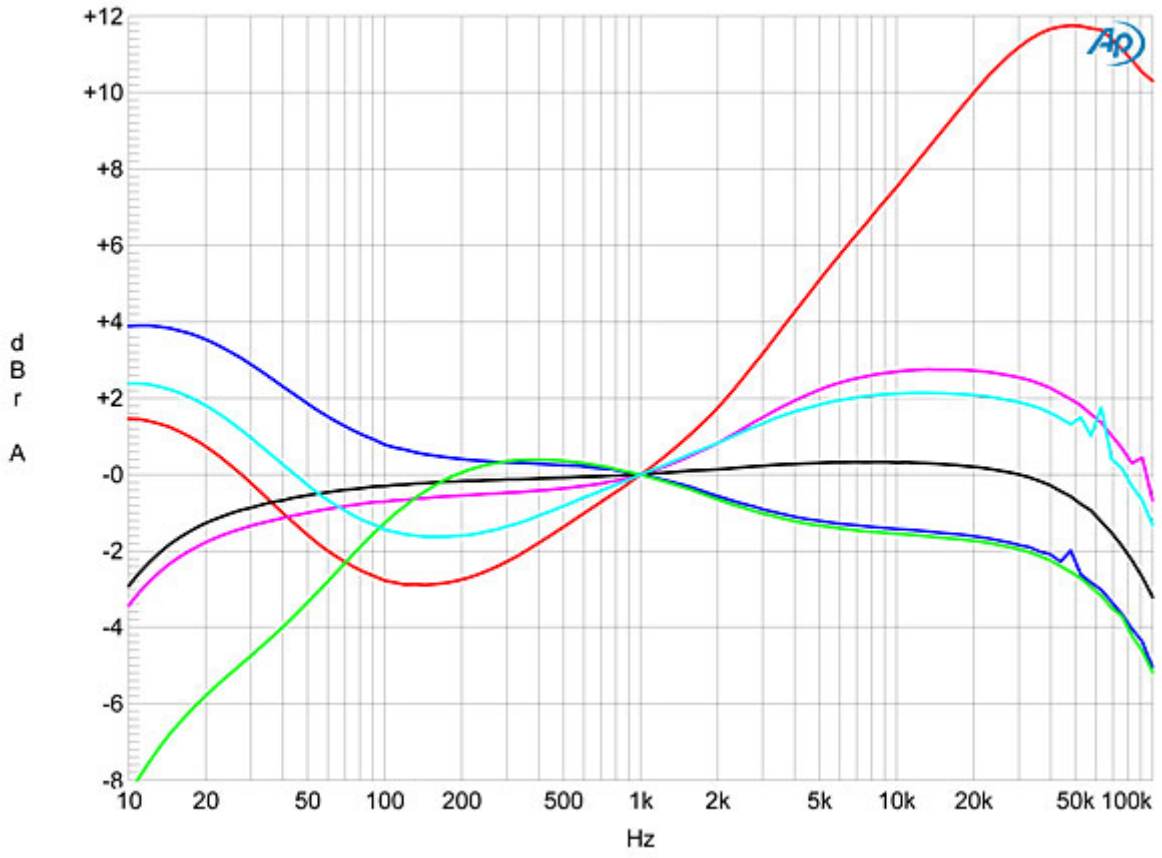

Fig.2 Sentec EQ11, left-channel response with these corrections: NARTB, NAB old (blue); 78, Decca *ffrr* 78 (red); CCIR, Decca LP *ffrr* (magenta); RIAA, New Ortho (gray); Columbia LP (green); AES, Philips, Capitol (cyan) (2dB/vertical div.).

With its relatively low voltage gain, the Sentec EQ11 is a quiet preamp. Fig.3 shows the low-frequency spectrum of its background noise with the EQ11 set to RIAA: No AC-supply–related spuriae are visible, though a rise in the noise floor can be seen below 20Hz, due to what's called "flicker noise." The unweighted, wideband signal/noise ratio was affected by this noise, measuring 59.9dB ref. 1kHz at 5mV in both channels with the inputs shorted. When A-weighted, this ratio improved to 72.6dB.

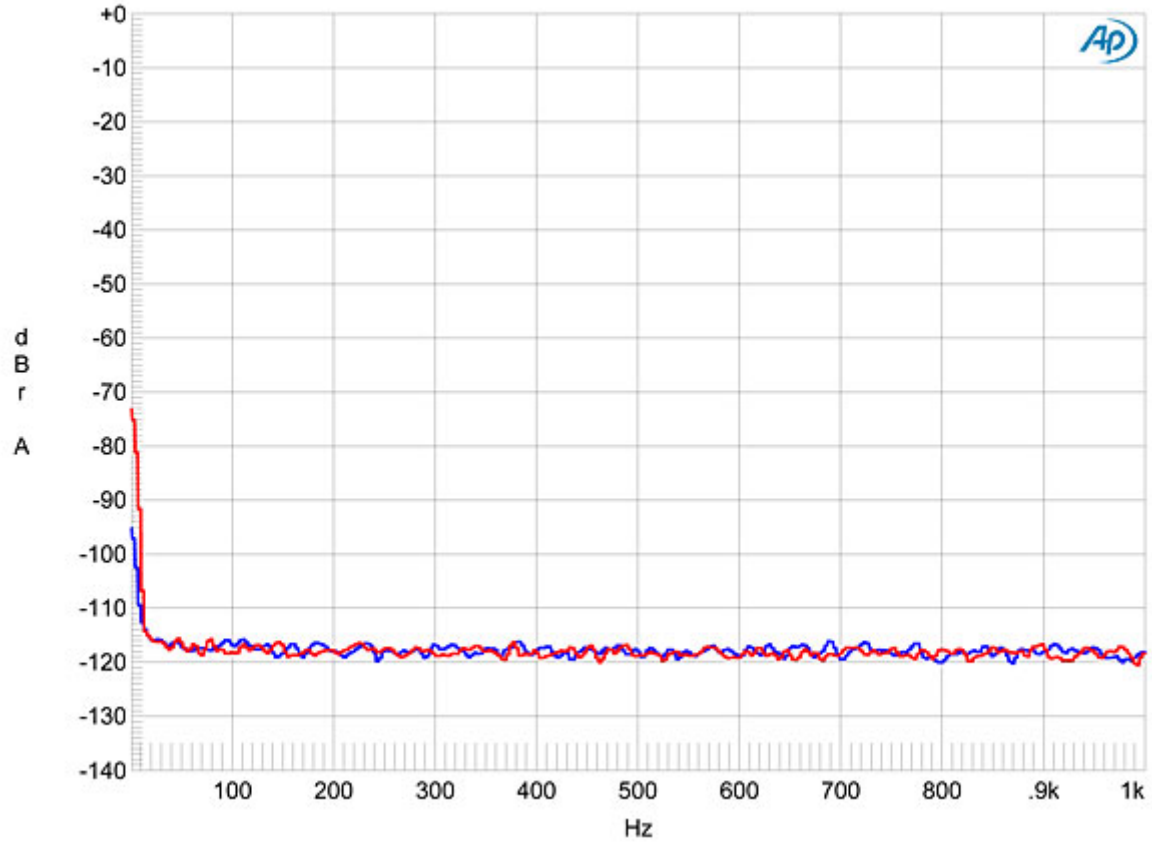

Fig.3 Sentec EQ11, background noise spectrum, DC–10kHz, ref. 1kHz, 5mV input into 100k ohms (linear frequency scale).

Again related to the low gain, overload margins were excellent. With RIAA equalization, the THD+noise percentage in the EQ11's output didn't reach 1% until a 1kHz input signal reached 411mV, which is equivalent to a margin ref. 5mV of 38.3dB! The margin at 20Hz was the same, and even at 20kHz, it was still a high 24dB. Harmonic distortion was fairly low, and almost entirely second harmonic in nature (fig.4). Tested with an equal mix of 19 and 20kHz tones at a level equivalent to 1kHz at 5mV and with the EQ11 set to RIAA EQ (fig.5), the intermodulation distortion was higher than I was expecting from the EQ11's harmonic-distortion behavior, with the 1kHz difference product lying at –40dB (1%).

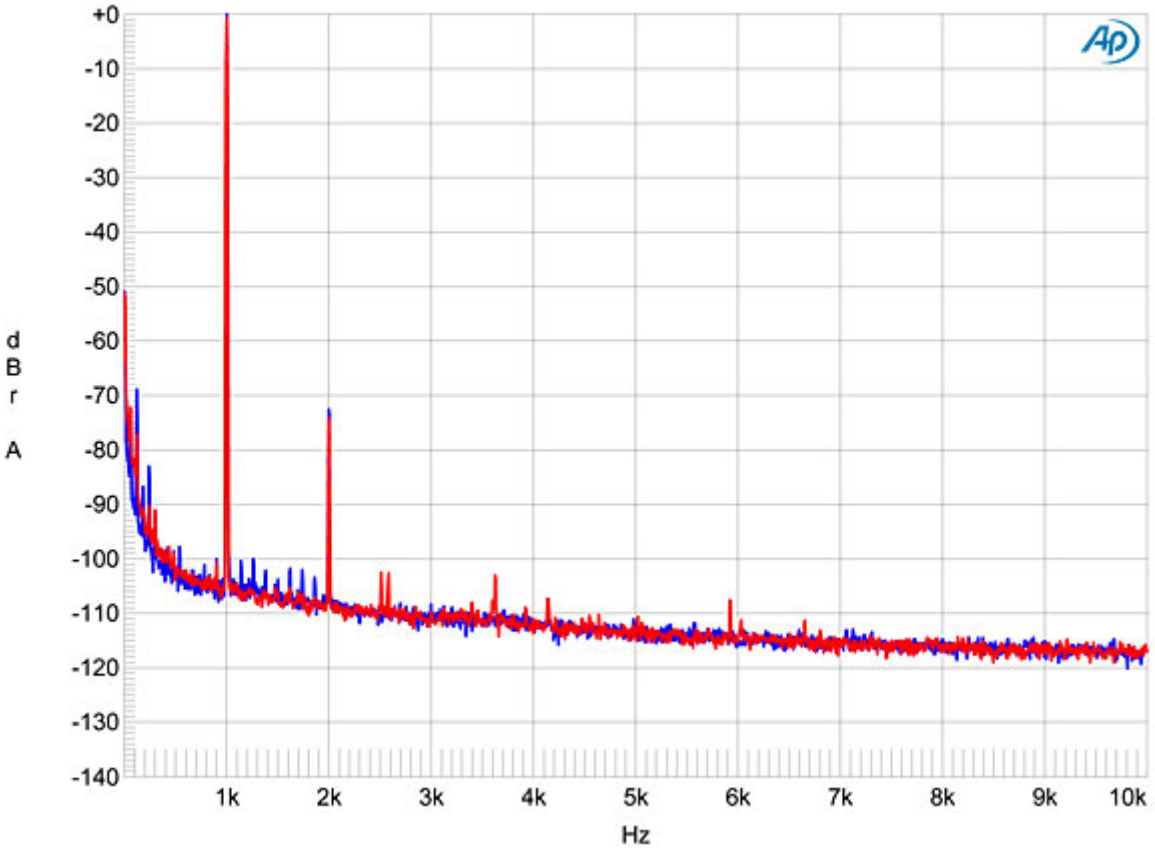

Fig.4 Sentec EQ11, spectrum of 1kHz sinewave, DC–10kHz, at 318mV (10mV input) into 100k ohms (linear frequency scale).

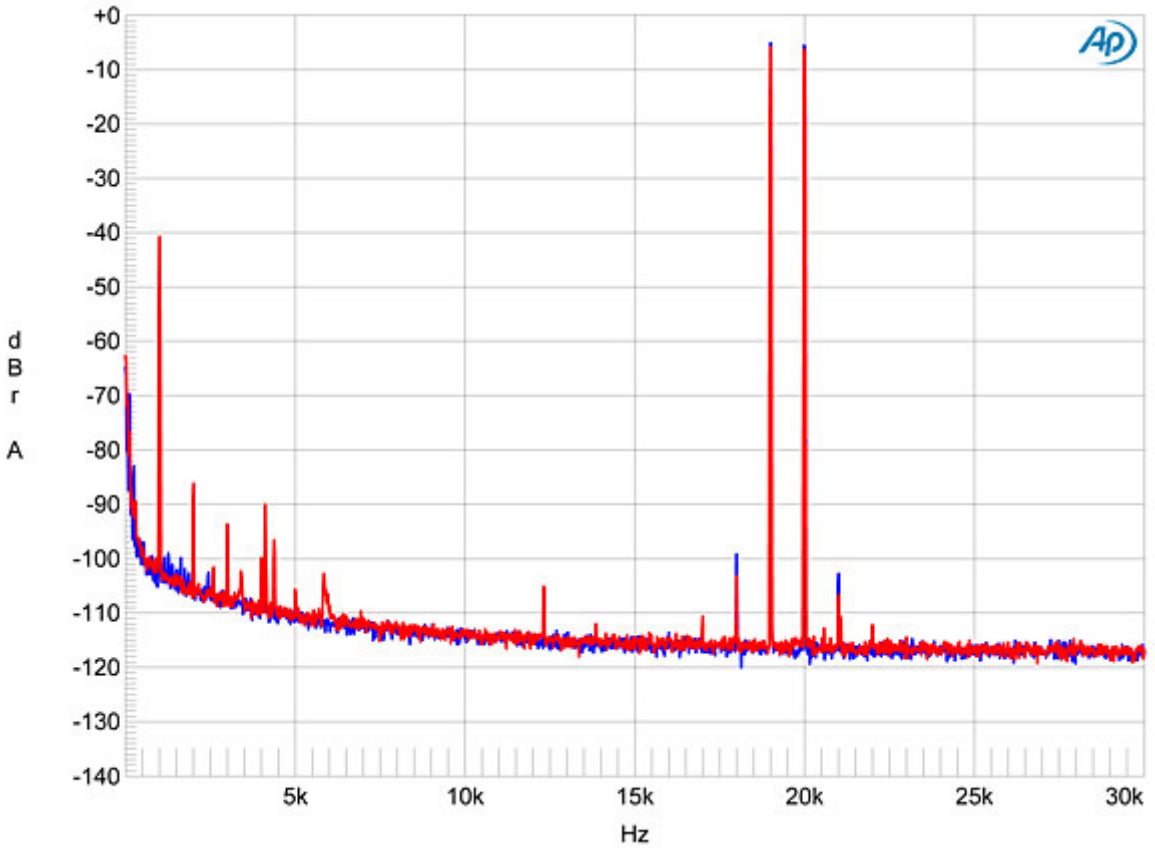

Fig.5 Sentec EQ11, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 318mV peak into 100k ohms (linear frequency scale; left channel blue, right red).

Despite its modest appearance and wall-wart power supply, Sentec's EQ11 offers respectable measured performance to accompany its flexibility of equalization.—**John Atkinson**

COMPANY INFO

Sentec
US distributor: Tone Imports
www.toneimports.com

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